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COTTON PRODUCTION IN MEXICO

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INTRODUCTION

Cotton is thought to be native to Mexico. It is found growing wild in many parts of the country. The early Spanish explorers found the Indians growing and using cotton. The discovery of cotton fabrics in the tombs and temples of the earlier races indicates that cotton was known and used by these people. It was cultivated to some extent during their colonial period, particularly in the western and central sections. Following the independence of Mexico in 1821, a local textile industry was developed and interest in cotton production has consequently increased.

Despite its early history, Mexican cotton has attracted very little attention in the world market. The total crop in recent years has averaged about 200,000 bales of which around 10 percent has been exported. In quality of fiber as well as in the general appearance and size of the bale the Mexican crop resembles cotton grown in the United States. This similarity in quality and appearance plus the ability of the trade to sell the cotton in the world markets on an equal basis with American cotton makes the question of further expansion of Mexican production of especial interest to American cotton growers.

ACREAGE, PRODUCTION, AND YIELDS

During the period for which data are available, the acreage of Mexican cotton has fluctuated considerably. The pre-war 5-year average (1909-10 to 1913-14) was approximately 253,000 acres and an average for the 5-year period ended 1928-29 was approximately 443,000 acres. From 1928-29, when the acreage exceeded 500,000 acres, the area declined each season until in 1932-33 only 192,400 acres were planted. Since that date planting has again increased and the 1934-35 area was 417,900 acres and the preliminary estimate of the 1935-36 acreage is 569,000 acres. Rapid increases have occurred during the last 2 years but the average acreage for the last 5 years is approximately 384,000 acres. (Fig. 1.)

With such wide annual fluctuations in acreage it is natural that there should be wide fluctuations in production. From 1909-10 to 1913-14 the average crop was 187,000 bales (478 pounds). For the 5-year period ended 1928-29 production averaged 243,000 bales. The 1926-27 crop

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1/ This report is based upon a field investigation of the chief cotton-growing areas of Mexico made by the author during the growing season of 1935.

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Figure 1. - Cotton-growing districts in Mexico are widely scattered. The Laguna District is not only the largest but is by far the most important.

was a record crop, totaling 359,800 bales. From this year both production and acreage have shown a marked downward trend. The 1935-36 crop is tentatively estimated at 208,000 bales. In both these years, however, heavy increases are shown over the 1932-33 crop of 101,500 bales.

Yields for the country as a whole show a downward trend. The yields of the 5-year pre-war period were reported to have averaged 358 pounds per acre, while for the period 1924-25 to 1928-29 the average was only 261 pounds per acre. A yield of 315 pounds per acre in 1931-32 represents the peak and an estimated 175 pounds per acre in 1935-36 represents the low point of recent years. That most of the Mexican crop is grown under irrigation, that most is planted only on the best soils, and that new cotton-growing districts where the soils are fertile and the insect damage is less have been added from time to time, account for the high average yields.

Table 1 - Area, production, and yield of cotton in Mexico, 1926-27 to 1935-36

Year	Area	Production	Yield
	Acres	Bales of 478 pounds	Pounds per acre
Av. 1909-10 to 1913-14	253,000	187,000	358
Av. 1924-25 to 1928-29	443,000	243,000	261
1926-27	613,300	359,800	281
1927-28	326,300	179,200	263
1928-29	502,200	278,500	265
1929-30	491,600	246,000	239
1930-31	390,300	177,500	217
1931-32	319,000	210,200	315
1932-33	192,400	101,500	252
1933-34	424,300	260,400	293
1934-35	417,900	223,000	255
1935-36 1/	569,000	208,000	175

1/ Preliminary.

Compiled from the official reports of the Mexican Secretariat of Agriculture, Mexico, D.F.

FACTORS AFFECTING COTTON PRODUCTION IN MEXICO

Most of Northern Mexico is a semi-desert area of sandy and rocky upland soil. Even though rainfall were sufficient, much of this area would be of little agricultural value. It is traditionally a mining and grazing country. Cotton is grown in comparatively small areas widely scattered in the northern part of the country and usually on the alluvial soils of the river valleys and old lake and river beds. These soils range from the most fertile to the light and sandy soils of the semi-arid upland. Much of the soil of Mexico is not adapted to cotton and under conditions considered to be normal will never produce cotton.

Climatic conditions of northern and central Mexico are very similar to those of our Southwest. Rain over the entire northern half of the country is light. Although the soil in general cannot be referred to as fertile, agriculture would no doubt be more widespread if it were not for the scant rainfall. The crops are seldom damaged by cold weather or frost. The growing season over most of the cotton area is somewhat longer than that of southern Texas. On the whole, climatic conditions, with the exception of short rainfall, may be said to be favorable for cotton growing.

As a rule, the labor supply in the cotton areas is sufficient to plant, cultivate, and harvest an average cotton crop, but during recent years some of the cotton-growing areas have experienced considerable labor trouble. Not only has labor been short due to strikes but local political disturbances as well have been responsible for labor trouble.

In general, farm labor is not so efficient as in the Cotton Belt of the United States. Cases are common in which Mexican farmers, after having spent several years in Texas where they used up-to-date farm machinery, have returned to Mexico and taken up cotton production, using the primitive cultural methods and the native plow so common in Mexico. The production of cotton in Mexico has no labor cost advantage over American production, even though labor may be cheap.

The railroads and transportation facilities between the coast, the textile centers, and the various cotton-growing districts are good on the whole, but the distance is often great. Considerable cotton grown along the northern border is now exported from American ports. Motor roads from town to town within the cotton-growing area as a rule are rather poor. Roads from the farm to the marketing centers are also in poor condition. Regardless of the condition of the roads, motor trucks for the transportation of cotton from the gins to local markets are becoming common, but railroads are still used for long hauls.

Mexico has probably all the cotton insects common to North America. The two most destructive are the Mexican boll weevil and the pink bollworm. With the possible exception of one or two districts, both these insects are well established in the chief cotton-growing areas of the Republic. Insect losses sometimes are as high as 50 percent or more of the crop. In the important growing areas the extent of the damage of the boll weevil and the pink bollworm is always a matter of great concern to cotton planters.

The annual consumption of cotton in Mexico for the last 5 or 6 years has averaged about 185,000 bales. This has had an influence upon production in that it affords a local market for the bulk of the crop. But cotton is not free from the competition of other crops in the use of the land. It is possible that wheat may become an important crop in some of the irrigated sections. It appears to be a governmental policy to encourage the smaller farmers to grow their own food requirements. This practice, if it becomes widespread, may have a tendency to retard or even to prevent large and rapid expansion of cotton acreage. In years of high prices for cotton, however, cotton acreage is often increased at the expense of food crops.

The national political situation has always been an important matter in relation to agricultural production. The present agrarian movement, in breaking up the large land-holdings and allotting the lands to the former tenants, is influencing the production of cotton to a certain extent. In areas in which the large plantations have been broken up and the land has been turned over to small farmers, as in the Matamoros district, cotton production has become rather disorganized. The landlords, who not only supplied the necessary supervision but who also extended credit and sold provisions to the cotton growers, are noticeably missing in several sections. Many growers who have been tenants for years and who now find themselves owners and managers of small farms are unable to adapt themselves to the changed conditions, and the crop acreage of those sections has declined. It is possible that when these former tenants have developed managerial ability and a system of production credit has been established, these areas will again produce their usual cotton crops.

DESCRIPTIONS OF COTTON-GROWING DISTRICTS

Although cotton is grown in several widely scattered areas of Mexico, the most important districts are located in northern Mexico, chiefly in the states of Coahuila, Lower California, Durango, Tamaulipas, and Chihuahua. Other small areas are also scattered in the central and northern states. For the purpose of statistical reporting, the Mexican Government has divided the country into the North, the Gulf, the North Pacific and South Pacific, and the Central States. Under this classification, some 19 states are mentioned as producing cotton, but only those named above are important.

Statistical reports on acreage and production are issued by the Secretary of Agriculture of the Federal Government at Mexico City. The Government releases three reports or estimates of cotton production--the first is usually issued in July, the second about the middle of October, and the third and final report in March of the following year.

The Laguna District. - The Laguna district, by far the most important cotton-producing district in Mexico, is located in the states of Coahuila and Durango near the city of Torreon, and is sometimes referred to as the Torreon district or area. It consists of about 1,250,000 acres of which approximately 500,000 could be cultivated. Present cultivation has not exceeded approximately 400,000 acres and under present conditions it is very improbable that the area will soon exceed that figure. The Laguna district is an ancient lake bed filled with silt washed down from the mountains by the Nazas and the Aguanaval rivers. The soil is very fertile and is renewed each year by the flood in much the same way as the basin lands of the Nile Valley.

Surrounded entirely by mountains and semi-arid country, this district has a rather hot, unpleasant temperature although the elevation is approximately 3,750 feet. During the summer months, day-time temperatures range from 95° to more than 100 degrees, but at night the temperature drops considerably--during the summer months the night temperature is said to average

about 64 degrees. Temperatures seldom drop as low as 20 degrees above zero during the winter months. The district is subject to wind and dust storms, especially in the spring. The average rainfall, which usually occurs during the growing season, ranges from 6 to 8 inches. Although the temperatures are high and often unpleasant, living conditions on the whole are no more unpleasant than in some of the areas of southwest United States.

Since rainfall is inadequate in this district, irrigation is necessary. Irrigation water is obtained from river floods and wells. As the rainy season opens in June or July in the mountains of Durango, the rivers swell and flow into the old lake bed. The flood is under control and the water is carefully regulated by several diversion dams along the river course. Dams hold back the flood until the water is high enough to flow out through the irrigation canals. The surplus then overflows the diversion dam and continues downstream until interrupted by other dams where the waters are again diverted into a canal system that waters an area below the first, and so on until the entire area is watered or until the river flow is exhausted. As a rule, very little water is wasted. When the seasonal rains begin in June or July in the valley the planters are prepared to use the water on land that has previously produced a crop of wheat. Under normal conditions the wheat crop has been harvested in June and the land is lying fallow, ready for the overflow. But if the flood is early, the first flush may be used for the last watering of the cotton crop. In order to retain the water and to saturate the soil thoroughly, dikes usually from 2 to 4 feet in height have been built around the fields. These fields are in fact large basins. Water is allowed to stand on the ground until it disappears.

As a rule flood irrigation is not sufficient to mature a crop of cotton; so during the summer season water is supplied by pumping from wells that vary in depth from 120 to 500 feet and produce anywhere from 900 to 2,200 gallons of water per minute. The number of wells has increased considerably during the last few years. It is estimated that there are now about 900 wells in the Laguna district. There has been trouble at various seasons in the past regarding the supply of electricity for the pumping, but the majority of farmers still depend upon electricity for the operation of their pumps. Diesel engines and in a few instances gasoline tractors are also used.

The level of the water table is an important factor in the Laguna district. Heavy floods tend to maintain a high water level but light floods add little to the underground water supply. As in years of light flood it is necessary to operate the pumps much of the time, the demand for water comes at a time when the supply is short. With the increased number of wells this often results in a sharp drop in the average level of the water table. This adds to the cost of pumping and it also indicates that the underground water supply may be a limiting factor in the expansion of crop area in the district.

As the river flows only at a fixed season of the year, it is necessary that the planter utilize the flood when it arrives. For this reason a system of rotation, in which wheat and cotton are the chief crops, has been developed. The land from which wheat has been harvested in June is, as a rule, in condition to receive the flood even though it arrives as early as July. As soon as the basins dry, the land is plowed, harrowed, and rolled. It is sometimes given a second plowing before the planting of cotton begins. If the flood continues or is late in arriving, the land from which a cotton crop has been harvested may also be watered and planted back to cotton the following spring, but this is not done unless the flood is large and late. Usually a cotton field receives one light watering and is sown to wheat after the crop is picked. The area planted to cotton depends largely upon the size and the extent of the flood.

Table 2.- Area, production, and yield of cotton in the Laguna district of Mexico, 1926-27 to 1935-36

Year	Area	Production	Yield
	Acres	Bales of 478 pounds	Pounds per acre
1926-27	333,600	225,300	322
1927-28	130,000	101,800	374
1928-29	247,100	145,500	281
1929-30	205,200	112,000	261
1930-31	190,000	63,600	160
1931-32	170,200	148,200	416
1932-33	106,800	59,900	268
1933-34	194,800	176,500	458
1934-35	150,100	111,700	447
1935-36 1/		69,000	

1/ Preliminary.

Compiled from the official reports of the Mexican Secretariat of Agriculture, Mexico, D. F.

The Laguna area is the most important of the widely scattered Mexican cotton-growing districts. Since it was first opened 30 or 40 years ago, it has held a prominent place in the production of the country. During the last 4 years it has produced approximately 60 percent of the total Mexican cotton crop.

Acreage and production have fluctuated widely, ranging from as much as 370,000 acres with an estimated production of only 80,000 bales in 1920-21 to as low as 47,000 acres with a crop of 20,000 bales in 1922-23. The low level of production during this period was largely because of heavy insect damage, low prices of cotton, and the scarcity of irrigation water. In 1926-27, acreage increased considerably, reaching 333,600 acres.

The peak of production was also reached in this year, when a crop of 225,300 bales was harvested. During the last 5 years the crop has averaged about 125,000 bales from an area of about 155,000 acres.

Yields are somewhat higher in the Laguna district than is the average yield for the United States. Despite the damages of the pink bollworm and other insects and the losses resulting from seasons of short water, during the last few years yields have averaged about 375 pounds per acre.

The cotton grown in the Laguna district is very similar in quality to that of Texas. The seed now used was introduced from Texas and it has been found profitable to renew the supply about every 5 or 6 years. A few years ago some effort was made to introduce Egyptian varieties but experiments showed that this type of cotton was not profitable under existing conditions and its production was abandoned. All cotton now grown in the Laguna district is American upland.

The crop is planted from February to May and occasionally as late as June. Picking, therefore, begins some time in July and often continues until as late as November, although every planter intends to harvest the crop as quickly as possible, that the land may be in condition to receive the annual flood when it arrives. If the flood continues after the crop is harvested, the cotton fields may be flooded and the same fields planted to cotton the following spring. In years of extremely early floods the cotton fields are often watered once while the crop is being picked.

Several of the large planters own and operate their own gins but the Laguna crop is concentrated at Torreon, where it is compressed for shipment.

Transportation facilities in the Laguna district, on the whole, are good. Railroads connect the principal towns with Mexican ports and cotton-consuming centers. Torreon is on the main line of the National Railways of Mexico extending from El Paso to Mexico City. It is also connected by railway with Saltillo, Durango, and Monterrey. The construction of highways and roads in the district is not extensive but on the whole the roads are in fair condition, particularly during the dry season. The question of transportation of cotton from the farms to the gins and from the gins to the central market is not a serious problem. Most of the cotton from the Laguna district is shipped to the south either for consumption in the Mexican mills or for export through the ports of Tampico and Vera Cruz.

The pink bollworm is the most destructive insect found in the Laguna district; it is said to be responsible for losses ranging from 10 to 70 percent of the crop. During the period from 1920 to 1925, the pink bollworm is said to have destroyed the larger portion of the Laguna crop.

The bollweevil is also very destructive and during certain seasons has reduced yields tremendously. The efforts made to keep these insects under control have made it possible to produce cotton, but costs have been

increased considerably. At present, cotton production in this district is holding its own against the ravages of insects, but should insect damage increase it will cause many farmers to shift from cotton to other crops. The damages of insects place a severe handicap on cotton production in this district.

The outlook for increased cotton production in the Laguna district depends largely upon local as well as national conditions. Should the consumption of Mexican mills increase considerably or should world cotton prices improve, it is probable that cotton production in the district would expand. To increase the present area materially, it will be necessary, because of the scant rainfall, to increase the water supply. Cotton acreage is very definitely limited to the amount of water available. Most of the area of approximately 1,250,000 acres could be brought under cultivation if the water were available. The construction of a dam in the state of Durango is being considered but until further irrigation projects are developed, increasing the water supply depends entirely upon increasing the number of wells and pumps in the district. To pump water is very expensive and, unless cotton or other crops become more profitable than at present, it is not probable that the use of this type of irrigation (except as a supplement to the flood) will materially increase.

Most of the farms in the district are rather large units that depend entirely upon local labor. During recent years strikes and labor disturbances have interfered with the operations on several of the larger plantations. There appears to be an ample supply of labor for the present area and if this area were expanded the labor supply could probably be increased. The problem of labor is not one of scarcity but of attitude between planters and laborers. Until a better understanding between the planters and the laborers is reached, there will be disturbances, strikes, and disorder.

Much of the area around the Laguna district is not a fertile agricultural region. A large number of the people outside the district do not produce sufficient food crops to feed themselves but depend upon the mining industry for their income. For this reason wheat, alfalfa, and corn are profitable local crops. Tariff protection is now extended to wheat and flour as a stimulus to wheat production. Several of the Laguna plantations are now depending on wheat for an increasing proportion of their cash income. Some of the largest plantations are practically out of the cotton-growing business and are devoting their entire attention to wheat. It is possible, considering the handicaps of cotton production and the relative price of the two crops, that the wheat acreage will increase in the future at the expense of cotton.

Mexicali District. - The Mexicali district is an irrigated area located in the state of Lower California, just south of the border between Mexico and the United States. It is one of the older cotton-growing districts of northern Mexico, having produced cotton as early as 1901 when the water was first brought to the district from the Colorado River. The early crops were small and were ginned in the United States and sold as

American cotton. By 1913, however, production had so increased that gins were built on the Mexican side and the crop became known as the Mexicali production.

The Mexicali district depends entirely upon irrigation waters from the Colorado River. Cotton is grown on rather large units. These plantations are leased to growers who operate them by employing laborers. The operation of the plantations, therefore, involves considerable capital and managerial ability. Costs are relatively higher in this area than in other sections of Mexico. Unless prices are good and yields are high, the income is not sufficient in many cases to show a profit above the cost of operation. The decline in cotton prices in 1920-21 as well as in 1929-30 left many of the operators bankrupt. This has had a disastrous influence upon the production in recent years.

Between 1913-14 and 1918-19 production increased from approximately 15,000 bales to 50,000 bales. Acreage in 1918-19 was approximately 95,000 acres. From 1919-20 to 1920-21 acreage increased to 125,000 acres and production to 79,200 bales. With the exception of the year 1921-22, when acreage was about 85,000, the area planted to cotton in this district following 1920-21 did not fall below 100,000 acres until 1931-32. Following 1931-32, however, the area declined to 27,000 acres in 1932-33 but has shown an increase since that time. The 5-year average (1931-32 to 1935-36) is 57,000 acres.

Production declined even more rapidly than acreage following 1928-29 owing to the decline in yields. During the early part of the last 5-year period, yields declined sharply. Production during this period averaged but about 24,000 bales. The lowest season of the period was in 1932-33, when the crop was but 14,000 bales. The present crop (1935-36) estimated at 50,000 bales is the largest production since 1929-30.

This area is faced with a number of physical disadvantages. The planting of cotton on the same land each year has resulted in the loss of soil fertility. Large areas have been abandoned because of low yields resulting from this constant cultivation or because of salting from irrigation waters. The area is also heavily infested with Bermuda grass which seriously interferes with the cultivation of cotton. To rid fields of the Bermuda grass and other obnoxious vegetation, the land is allowed to lie for a season without the application of water. During this period all vegetation naturally dies from the want of moisture.

The Meixcali district is one of the older cotton-growing districts of Mexico, but it presents several problems that must be overcome before it will be an increasingly important cotton area. A system of crop rotation designed to rebuild soil fertility and to control Bermuda grass and weeds is necessary if yields are to be maintained. Under such a system of rotation, even though the crop area may be expanded and yields may be increased, production will increase but slowly.

Table 3 - Cotton area, production, and yield of the Mexicali district (Lower California) of Mexico, 1926-27 to 1935-36

Year	Area	Production	Yield
	Acres	Bales of 478 pounds	Pounds per acre
1926-27	130,000	86,000	317
1927-28	110,000	45,000	194
1928-29	160,000	80,000	239
1929-30	147,000	75,000	244
1930-31	100,000	45,000	217
1931-32	69,000	26,000	182
1932-33	27,000	14,000	248
1933-34	54,000	18,000	159
1934-35	55,000	22,000	190
1935-36 1/	80,000	50,000	215

1/ Preliminary

From the Crop Reporting Board of the Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C. These estimates are slightly different from those released by the Mexican Government.

Don Martin Project. - The Don Martin irrigation project, located about 75 miles southwest of Laredo, Texas, in the states of Coahuila and Nuevo Leon, is one of the more important of the north central Mexican cotton-growing areas.

The water for this project is obtained from a dam built at the junction of the Rio Salado de los Nadaderes and the Rio Sabinas. The dam has a capacity of 1,385,000,000 cubic meters of water, said to be sufficient to irrigate approximately 150,000 acres of land. It was built by the Mexican Federal Government and the operation of the entire project is a governmental undertaking. Since the opening in 1932-33 when the cotton crop was a little more than 12,000 acres, the cotton acreage has increased until the 1935-36 crop is estimated at 86,500 acres. Production in the Don Martin district has ranged from 2,400 bales in 1932-33 to an estimated crop of 31,800 bales in 1935-36.

Although the trend has been steadily upward, the present acreage represents but little more than half of the estimated area that could be irrigated under the present project.

The land of the valley was first allotted to growers on the basis of about 250 acres per farmer. This was later reduced; at present, only about 60 or 70 acres are allotted to each grower. The capacity of the dam is estimated to be sufficient to hold in reserve all the water necessary to irrigate the total area of the valley, but there appears to be some possibility that the watershed will not keep the dam filled to its full capacity. Unless there are heavy rains in the fall and winter, there is a possibility, should the acreage be increased at the same rate in the future as it has in the past, that the 1936-37 crop will not have enough water to carry it through.

Insect damage, particularly the bollweevil, has been increasing since the project was opened and is now a severe problem. The Government is making an effort to control weevil damage, as are the local farmers, and the results are perhaps somewhat more successful in the Don Martin district than in some of the other areas in northern Mexico. Calcium-arsenic dust is used in large quantities and as the growers become more proficient in the handling of the poison and as the cultural methods are improved, it is possible that the degree of bollweevil damage will decrease.

So far as known, the pink bollworm has not invaded this area but it is difficult to believe that, with practically every other cotton-growing district of the Republic infested with pink bollworm, this area can long remain free of the pest. Should pink bollworm invade the Don Martin district, it would place a severe handicap on production.

Growers in this district are financed largely by private corporations engaged in ginning and buying cotton and cottonseed. Several of these organizations are located within the district and each has a large number of growers as clients. They extend credit to farmers throughout the growing season and in the fall gin their cotton and either buy it direct or sell it on commission. Cotton shipped from the Don Martin district goes south through Monterrey or, if for export, may under certain conditions be transported through the United States.

The increase of cotton production in the Don Martin district to its maximum of approximately 150,000 acres is dependent upon the supply of irrigation water and the available labor. Under the existing conditions labor seems to be no problem. Numerous Mexican farmers, who until recently have farmed in Texas, are now returning to this district and are taking up lands. As a rule, these farmers are better trained than the native farmers of northern Mexico.

The Don Martin project is new--perhaps too new to make possible a definite prediction as to its future--but it seems reasonable that it may expand somewhat, especially if the water supply comes up to the estimated figure. As in most newly irrigated districts, the first few years have been very promising, but, based on the history of other areas under similar conditions, it appears that there are problems ahead to be solved and that expansion in the future will be slower than in the past.

Table 4 - Cotton area, production, and yield of the Don Martin district of Mexico, 1932-33 to 1935-36

Year	Area	Production	Yield
	Acres	Bales of 478 pounds	Pounds per acre
1932-33	12,400	2,400	93
1933-34	37,100	8,600	111
1934-35	51,400	18,600	173
1935-36 1/	86,500	31,800	176

1/ Preliminary.

Compiled from the official reports of the Mexican Secretariat of Agriculture, Mexico, D. F.

Matamoros District.- The Matamoras district, lying south of the Rio Grande River between the towns of Reynosa and Matamoros, has produced cotton for a number of years. The soil and climatic conditions of this district resemble those of the lower Rio Grande Valley of Texas. The district is not so highly developed but it offers considerable possibility if irrigation water is made available. At present, irrigation in this district is confined chiefly to pumping operations on some of the larger plantations. The bulk of the crop is rain grown. The rainfall, if well distributed from February to July, is sufficient to mature a cotton crop.

Production in the Matamoros district has fluctuated considerably in the last few years owing to abnormal weather conditions, insect damage, and local labor and political disturbances. The present crop is estimated at approximately 19,000 bales; in the past the total crop has exceeded 40,000 bales. (Table 5.)

Some of the larger plantations of the Matamoros district have been subdivided and are now operated by farmers who were previously tenants. Many are inexperienced in the management of even the smallest units. They also lack the needed capital and supplies and provisions to carry them from the planting to the harvest season. This condition has resulted in a great deal of unrest and many local labor troubles. Until capital and provisions are supplied to these people, it is not probable that cotton production of this district will increase beyond the past peak of 40,000 bales.

The crop is ginned in the district and is either shipped to the Mexican spinning centers or to the ports; or under recent regulations it may be exported to Europe through Houston, Texas. Considering the limitations upon cotton growing in this district, there seems to be little evidence to indicate that an expansion of acreage beyond previous records will take place in the near future. But if this district should receive a division of the water supply of the lower Rio Grande Valley, cotton acreage and yields probably would increase.

The Juarez District.- The Juarez district, lying south of El Paso, Texas, is relatively an unimportant area. Production during the last 4 years has averaged approximately 8,9000 bales (table 5). At one time much of this cotton was sold across the river in the United States but in recent years gins have been built on the Mexican side and the crop is now ginned and marketed in Mexico. The opportunities for expanding this district are entirely dependent upon increased irrigation facilities. The water supply is at present drawn from the Rio Grande River and probably can not be increased within the next few years.

Other Districts.- Several scattered districts of Mexico produce small quantities of cotton, the total of which does not exceed 10,000 to 20,000 bales annually (table 5). The chief of these are the scattered areas along the Conchos River in the state of Chihuahua. Considerable development in this area, particularly near the city of Chihuahua, has occurred in recent years but the production is not yet sufficient to make it of major importance. Small areas in the states of Sinaloa and Nayarit

produce some cotton. Some two or three small districts in the latter states are perhaps the oldest cotton-growing areas in the Republic but are more or less dependent upon local cotton mills for markets. Some efforts have been made to produce cotton in the state of Oaxaca, where some of the larger cotton-textile mills are located, but production in this section of Mexico is still of minor importance. A few scattered areas in the state of Tamaulipas between Matamoros and Victoria produce some cotton. A small quantity is grown in the state of Vera Cruz. All of these areas are relatively unimportant and promise little expansion in the near future.

Table 5 - Cotton production of Matamoros and Juarez districts and all other small districts of Mexico, 1932-33 to 1935-36

Year	Matamoros district	Juarez district	All other small districts
	Bales of 478 lbs.	Bales of 478 lbs.	Bales of 478 lbs.
1932-33.....	10,600	7,000	7,600
1933-34.....	33,700	12,800	10,800
1934-35.....	40,800	10,700	19,200
1935-36 1/...	19,000	5,300	22,600

1/ Preliminary.

Compiled from official reports of the Mexican Secretariat of Agriculture, Mexico, D. F.

OUTLOOK FOR COTTON PRODUCTION IN MEXICO

The bulk of the Mexican cotton crop is grown in three or four widely scattered districts of Northern Mexico. With the exception of a few small rain-grown areas, the northern crop is produced entirely by irrigation. The present areas are confined largely to valleys, ancient lake beds, and river bottoms, where a supply of irrigation water is available. There are no doubt a number of valleys or other areas in Northern Mexico where the crop could be grown if a water supply were available. The expansion of cotton acreage in this part of the country materially above previous peaks depends largely upon finding new water supplies and the construction of dams and other irrigation works. Without considerable improvement of the present economic conditions within the country the development of new irrigation projects is not probable.

Mining is one of the chief sources of income of Northern Mexico. Many people who are engaged in mining depend upon buying food rather than growing it, as is usual in other sections of the country. In the past the bulk of the food supply of these people was imported but during recent years an interest in the production of food crops for this local market has developed and to some extent is influencing the planting of grain and other food crops in the irrigated cotton areas.

Losses from insect damage, particularly in the Laguna and Don Martin districts, are heavy. The reduced yields, along with the relatively high cost of irrigation in certain districts, are often responsible for heavy losses to cotton planters. The increasing profitableness of grain and other food crops as compared with the income from cotton will affect to some extent the future cotton acreage, and may result in a considerable portion of the now irrigated cotton areas being used for the production of wheat or other cereals.

Possibilities of greatly extending production into Central and Southern Mexico are poor. Some of this area could be made to produce cotton but much of it lies too high for this crop. This area is now the chief food-producing district of the Republic. Cotton would therefore have to compete with such food crops as corn, beans, wheat, and vegetables.

Upon the whole, Mexico may be expected to continue to produce sufficient cotton to supply the requirements of the local textile industry; but the possibility of increasing the production to a point at which exports will play an important part in the world's cotton markets is rather remote at the present time.

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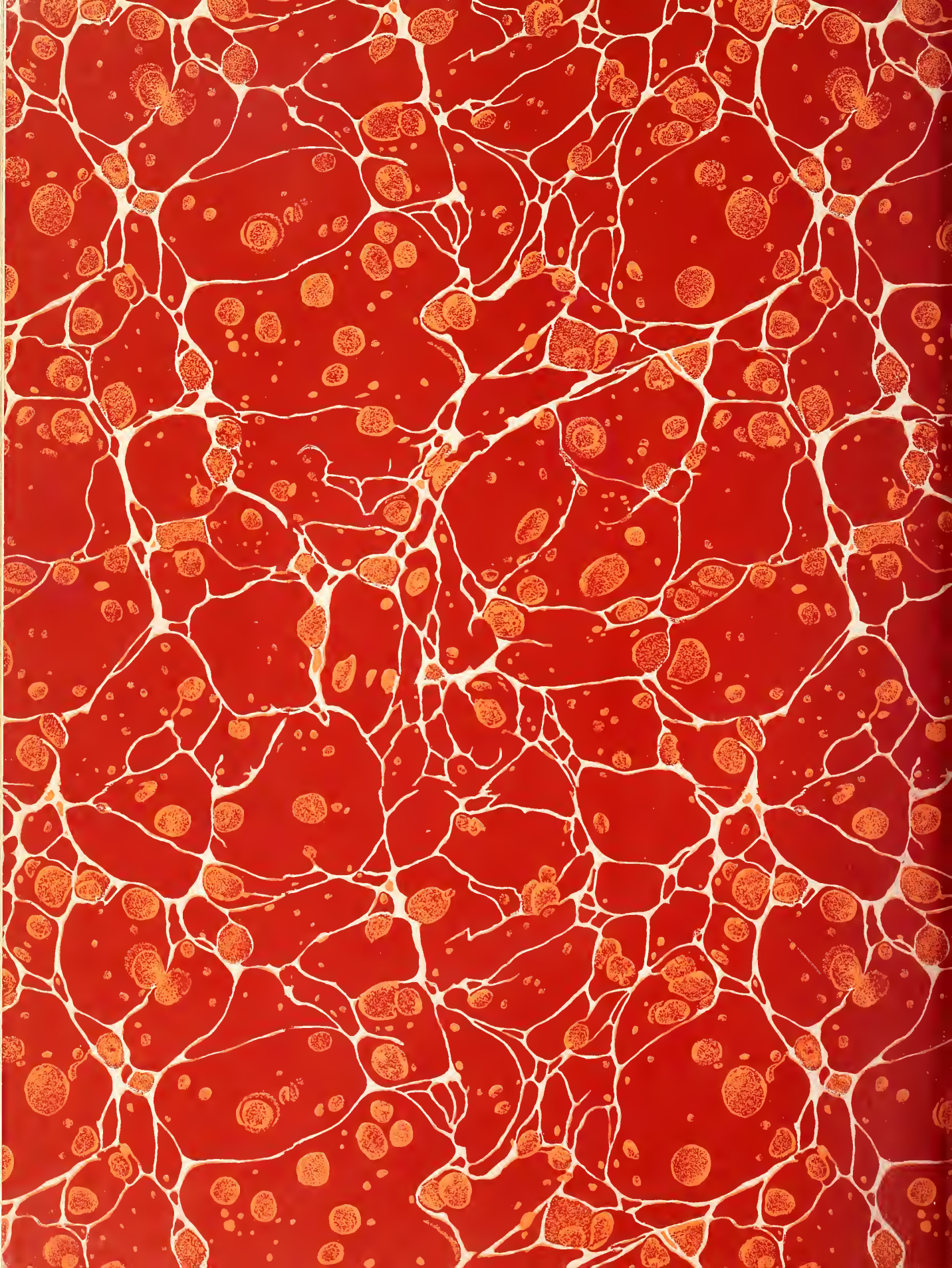

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